Air Quality Permit

Issued to: US Air Force - Malmstrom AFB
341 CES/CEVC
39 - 78th Street North
Malmstrom AFB, MT 59402-7536

Permit #1427-06
Modification Request Received: 11/26/02
Department Decision on Modification: 01/13/03
Permit Final: 03/28/03
AFS #013-0016

An air quality permit, with conditions, is hereby granted to the United States Air Force – Malmstrom Air Force Base (Malmstrom), pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM), 17.8.701, *et seq.*, as amended, for the following:

SECTION I: Permitted Facilities

A. Plant Location

The Malmstrom base is located primarily in Township 20 North, Range 4 and 5 East, and consists of approximately 3,159 acres. The base is in Cascade County, Montana, in close proximity to the City of Great Falls.

B. Current Permit Action:

On November 26, 2002, the Department of Environmental Quality (Department) received a permit modification request from Malmstrom for the removal of the existing Building 1075 natural gas fired boiler rated at 11.954 million British thermal units per hour (MMBtu/hr) heat input capacity and replacement of the existing unit with two smaller 2.1 MMBtu/hr heat input capacity units. Because potential emissions from the replacement boilers are less than the de minimis threshold of 15 tons per year (tpy) for any regulated pollutant, the Department determined that the changes can be accomplished in accordance with ARM 17.8.705(1)(r). Emission calculations demonstrating compliance with ARM 17.8.705(1)(r) are contained in Section IV of the permit analysis.

The letter received by the Department on November 26, 2002, also indicated that Malmstrom intends to install and operate a 200-kilowatt (kW) emergency diesel generator in the Building 780, Missile Services Facility. Because potential emissions of all regulated pollutants from the proposed Building 780 emergency diesel generator, operating under emergency/back-up equipment status, are less than 15 tons per year, the Department determined that installation and operation of the Building 780 emergency diesel generator can be accomplished under the provisions of ARM 17.8.705(1)(r). Section II.A.21 contains emergency/back-up equipment requirements. Emission calculations demonstrating compliance with ARM 17.8.705(1)(r) for the Building 780 emergency diesel generator are contained in Section IV of the permit analysis.

On January 29, 2003, the Department received notice of a contested case hearing before the Montana Board of Environmental Review (Board) regarding specific conditions that were included in the Department's decision on Montana Air Quality Permit #1427-06, issued January 13, 2003. Based on the Settlement Stipulation and Order issued by the Board on March 28, 2003, various changes were made to the permit prior to final issuance. Section I.D of the permit analysis includes a detailed description of those changes.

SECTION II: Limitations and Conditions

A. Emission Limitations

1. Malmstrom shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any of the three heating plant boilers or the coal handling baghouse that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

2. Particulate emissions from any of the three heating plant boilers shall not exceed 4.0 lbs/hour (ARM 17.8.715).

3. SO_2 emissions from any of the heating plant boilers shall not exceed (ARM 17.8.715):

   a. 0.320 lbs/MMBtu; or
   b. 33.9 lbs/hour.

4. NO_x emissions from any of the heating plant boilers shall not exceed (ARM 17.8.715):

   a. 0.50 lbs/MMBtu; or
   b. 53 lbs/hour.

5. Total heat content of the fuel combusted (coal + natural gas) in the three heating plant boilers during any rolling 12-month time period shall not exceed 999,000 MMBtu. Total BTUs combusted shall be determined on a monthly basis using the following equation (ARM 17.8.710):

   Total BTUs Combusted = (A x B) + (C x D)

   Where: A = Natural gas combusted (MMscf)
   B = Average heat content of the natural gas (Btu/MMscf)
   C = Coal combusted (tons)
   D = Average heat content of the coal (Btu/ton)

6. Maximum operating level of the three heating plant boilers combined shall not exceed 212 MMBtu/hour heat input (ARM 17.8.710).

7. A dry lime scrubber and baghouse shall be used on each heating plant boiler when combusting coal. During start-up periods of boilers #1 or #3 on coal, the scrubber and baghouse may be bypassed until the exhaust gas temperature reaches 350^{o} F, provided no emission limits are violated (ARM 17.8.715).

8. Malmstrom shall operate a measurement device prior to the dry scrubber to determine the temperature of the exhaust gas from boilers #1 and #3. This device shall be used to determine when the exhaust gas must enter the scrubber and baghouse (ARM 17.8.710).

9. Malmstrom shall not emit from the coal handling baghouse, particulate matter in excess of 0.02 gr/dscf (ARM 17.8.715).

10. A baghouse shall be used to control emissions from the coal handling system (ARM 17.8.715).
11. Malmstrom shall not cause or authorize emissions to be discharged to the

atmosphere from coal storage and handling that exhibit opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

12. Malmstrom may combust coal and/or natural gas in heating plant boiler #1 (ARM 17.8.710).

13. Malmstrom shall combust only natural gas in heating plant boiler #2 (ARM 17.8.710).

14. Malmstrom shall combust only coal in heating plant boiler #3 (ARM 17.8.710).

15. Malmstrom shall obtain a coal analysis, which is representative of each load of coal received, from each coal supplier. The analysis shall contain, at minimum, sulfur content, ash content, and BTU value (ARM 17.8.710).

16. Malmstrom shall not cause or authorize to be discharged into the outdoor atmosphere from the classified document incinerator, particulate matter in excess of 0.10 grains per standard cubic foot of dry flue gas, adjusted to 12% carbon dioxide and calculated as if no auxiliary fuel had been used (ARM 17.8.316).

17. Malmstrom shall not cause or authorize to be discharged into the outdoor atmosphere from the classified document incinerator emissions that exhibit an opacity of 10% or greater averaged over 6 consecutive minutes (ARM 17.8.316).

18. Malmstrom shall utilize fuel storage tanks H-1 and H-2 to store JP-8 jet fuel or a similar jet fuel with a vapor pressure <3.5 kPa only (ARM 17.8.710).

19. An internal floating roof shall be operated on each tank listed in Section I.B.5 of the permit analysis (ARM 17.8.715).

20. Malmstrom shall not combust any hospital/medical/infectious waste, as defined in 40 CFR 60, Subpart Ce, at their facility (ARM 17.8.710).

21. The Building 780 emergency/back-up diesel generator shall only be operated during periods when electric power from the local utility is interrupted or as necessary for routine maintenance of the generator (ARM 17.8.710).

B. Testing Requirements

1. Malmstrom shall conduct source testing for SO_2, particulate, and opacity on boilers #1 and #3 and demonstrate compliance with the emission limits contained in Section II.B.1 through 3. The above testing shall be performed while the boilers are being fired exclusively on coal. The testing required in year 2000 has been rescheduled such that the next testing campaign is to begin by January 31, 2001. After 2001, compliance testing shall continue to be performed on a once-every-5-year basis, or an alternative schedule approved by the Department (ARM 17.8.710 and ARM 17.8.105).

2. Malmstrom shall provide the Department with a record of the amount of coal being combusted and a coal analysis for sulfur and BTU value during all compliance source tests on the heating plant boilers (ARM 17.8.710 and ARM 17.8.106).

3. All emission testing shall be conducted in accordance with the Montana Source

Test Protocol and Procedures Manual (ARM 17.8.106).

4. Source testing on the classified document incinerator shall be done in accordance with ARM 17.8.316 and the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

5. The Department may require further testing (ARM 17.8.105)

C. Operational and Emission Inventory Reporting Requirements:

1. Malmstrom shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory contained in the permit analysis, and sources identified in Section I of the permit analysis.

   Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall include the information listed below and shall be in the units as required by the Department (ARM 17.8.505).

   a. Tons of coal combusted in heating plant boiler #1.
   b. Million cubic feet of gas combusted in heating plant boiler #1.
   c. Million cubic feet of gas combusted in heating plant boiler #2.
   d. Tons of coal combusted in heating plant boiler #3.
   e. Tons of coal delivered to the facility.
   f. Tons of coal sent to the coal handling system.
   g. Sulfur analysis for coal combusted during the past calendar year.
   h. Tons of ash removed from the facility.
   i. Tons of material combusted in the classified document incinerator.
   j. Million cubic feet of natural gas used to fire the classified document incinerator.
   k. Gallons of JP-8 throughput.
   l. Vehicle miles traveled on haul roads, type of vehicle category, and percent paved.
   m. Gallons of diesel used in haul vehicles and unloaders.
   n. Fugitive dust information consisting of a listing of all plant vehicles including:

      i. Vehicle type;
      ii. Vehicle weight;
      iii. Number of tires on vehicle;
      iv. Average trip length;
      v. Number of trips per day;
      vi. Average vehicle speed;
      vii. Area of activity; and
      viii. Vehicle fuel usage (gasoline or diesel) - annual total.

      If the information on vehicle size has not changed over the past year, Malmstrom only needs to supply the vehicle type and the vehicle miles traveled (VMT) by each vehicle type as required in Section II.D.1.m and n. If changes occur, Malmstrom shall supply the information in Section II.D.1.o for the changed vehicles.

2. Malmstrom shall document the total Btu value of the fuel combusted in the three

heating plant boilers, based on the equation in Section II.A.5. Further, by the 25th of each month, Malmstrom shall total the fuel combusted during the previous twelve months to verify compliance with the limitation in Section II.A.6. A written report of the compliance verification shall be submitted to the Department annually. The report for the previous calendar year shall be submitted no later than March 15 and may be submitted along with the annual emission inventory (ARM 17.8.710).

3. Malmstrom shall notify the Department of any construction or improvement project conducted pursuant to ARM 17.8.705(1)(r) that would include a change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or that would result in an increase in source capacity above its permitted operation or the addition of a new emissions unit. The notice must be submitted to the Department, in writing, 10 days prior to start up or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.705(1)(r)(iv) (ARM 17.8.705).

4. Malmstrom shall document, by month, the hours of operation of the Building 780 emergency/back-up power generator at the facility. By the 25th day of each month, Malmstrom shall total the hours of operation for the Building 780 emergency/back-up diesel generator during the previous 12 months to verify compliance with emergency/back-up status requirements. A written report of compliance verification shall be submitted along with the annual emission inventory (ARM 17.8.710).

5. All records compiled in accordance with this permit must be maintained by Malmstrom as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.710).

D. Notification

Malmstrom shall provide the Department with written notification of the following dates within the specified time periods (ARM 17.8.710):

1. All compliance source tests as required by the Montana Source Testing Protocol and Procedures Manual (ARM 17.8.106).

2. Anticipated date of commencement of modification of heating plant boiler #1 to simultaneously combust natural gas and coal within 30 days of commencement of the modification.

6. Actual completion of modification to heating plant boiler #1 to simultaneously combust natural gas and coal within 15 days of actual start up of the modified heating plant boiler #1.

- As of January 9, 2003, the modification requiring notification in Section II.D.2 and Section II.D.3 has not been initiated.

Section III: General Conditions

A. Inspection - Malmstrom shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver - The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if the recipient fails to appeal as indicated below.

C. Compliance with Statutes and Regulations - Nothing in this permit shall be construed as relieving the permittee of the responsibility for complying with any applicable federal or Montana statute, rule or standard, except as specifically provided in ARM 17.8.701, *et seq.* (ARM 17.8.717).

D. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401 *et seq*., MCA.

E. Appeals - Any person or persons jointly or severally adversely affected by the Department's decision may request, within fifteen (15) days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review. A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The Department's decision on the application is not final unless fifteen (15) days have elapsed and there is no request for a hearing under this section. The filing of a request for a hearing postpones the effective date of the Department's decision until the conclusion of the hearing and issuance of a final decision by the Board.

F. Permit Inspection - As required by ARM 17.8.716, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by Department personnel at the location of the permitted source.

G. Construction Commencement - Construction must begin within three years of permit issuance and proceed with due diligence until the project is complete or the permit shall be revoked.

H. Permit Fees - Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, failure to pay by the permittee of an annual operating fee may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board of Environmental Review.

Permit Analysis
US Air Force - Malmstrom AFB
Permit #1427-06

I. Introduction/Process Description

A. Facility Description

The United States Air Force – Malmstrom Air Force Base (Malmstrom) consists of approximately 3,159 acres, and is located in Township 20 North, Ranges 4 and 5 East. The base is in sections 1, 2, 3, 10, 11, 12, 13, 14, and 15. Malmstrom, adjacent to the City of Great Falls, is located in Cascade County.

The air force base was established in 1942. The facility currently houses the 341st Missile Wing. The base itself contains the facilities necessary for all of its military and non-military personnel, which currently number between 4,000 and 5,000. The greatest stationary source of air contaminants at Malmstrom are the three heating plant boilers, although several other miscellaneous smaller sources of emissions are present at the base.

B. Permitted Equipment:

1. Heating Plant Boiler #1 (boiler #1), with dry lime scrubber and baghouse.

2. Heating Plant Boiler #2 (boiler #2), with dry lime scrubber and baghouse.

3. Heating Plant Boiler #3 (boiler #3), with dry lime scrubber and baghouse.

4. Classified Document Incinerator

5. Two 210,000-gallon aboveground fuel storage tanks (H-1 and H-2).

6. Two 2.1 million British thermal unit per hour (MMBtu/hr) heat input capacity boilers in Building 1075.

C. Permit History

Permit **#1427** was issued to Malmstrom on October 28, 1980. The application required a Prevention of Significant Deterioration (PSD) review by the state of Montana for SO_2, particulate, and NO_x. The application was deemed complete September 4, 1979. The application was for the construction of a new heating plant at Malmstrom. Malmstrom proposed three high temperature hot water generators (heating plant boilers #1, #2, and #3) to be used as a heating plant for the base. The boilers have been installed on the base. Each boiler is rated at 85 MMBtu heat output per hour, with an input design capacity of 106.25 MMBtu/hr. Malmstrom identified that the three boilers would be capable of combusting coal. Two of the boilers would also have natural gas capabilities. The coal would generally be used only during the coldest periods of the year. At other times, the boilers would be operated using natural gas.

The Department of Environmental Quality (Department) determined the boilers are not subject to New Source Performance Standards (NSPS) because the size of the boilers is below the cutoff contained in Subpart D and Da and the date of installation is before the effective date for Subpart Dc. Also the "boilers" do not actually produce steam, they produce hot water.
Malmstrom was also required to obtain an EPA PSD permit for this project since the state

of Montana did not have a fully delegated program at the time the permit application was processed. The **EPA PSD Permit** was issued pursuant to 40 CFR 52.21 (as amended 43 FR 26388). This permit was issued June 1, 1981. The EPA PSD permit contains emission limits. One of the limits states that the maximum operating level of the system shall not be greater than the combined capacities of any two of the three boilers operating simultaneously.

In 1994, Malmstrom requested a permit alteration to remove the 85% control efficiency requirement contained in Permit #1427. The permit application was given Permit **#1427-01**. An incompleteness letter was sent to Malmstrom. Malmstrom chose not to respond and to have the application withdrawn. The application was withdrawn by Malmstrom and Permit #1427-01 was not issued.

Permit #1427-02 accomplished numerous permitting goals at Malmstrom. Specifically, the requirement that the dry scrubbers maintain a control efficiency of 85% for SO_2 was removed. That level of efficiency was not practical when the facility is burning low sulfur coal or being operated at low loads. Because the emissions under this scenario are below the limits identified in the Department permit, the Department has determined the SO_2 emission limits contained in the permit are sufficient to maintain the ambient air quality of the area. Permit Alteration #1427-02 also identified the fuels each of the boilers are capable of burning.

In addition, Permit #1427-02 allowed Malmstrom to bypass the scrubbers and baghouses on the boilers during start up, until the scrubber inlet temperature reaches approximately 350°F. At temperatures below this level, the moisture in the lime slurry will not be completely evaporated and will cause blinding of the bags. All emission limits are still in effect during periods of scrubber bypass.

Further, Permit #1427-02 authorized the modification of the #1 boiler to enable the boiler to fire coal and natural gas simultaneously. Prior to Permit #1427-02, the boiler could not physically fire both fuels at once. The permit also established limits for NO_x emissions and modified the SO_2 limits for the boilers. The SO_2 emission limit was changed from 37 lbs/hour to 33.8 lbs/hour and a limit of 0.320 lb/MMBtu was added to be consistent with the BACT determination at the time of EPA's PSD permit issuance. The permit also limited the total fuel consumption for the boilers. The fuel consumption limitation (along with the NO_x and SO_2 limits) ensures that emissions of any pollutant from the three boilers will be less than 250 tons/year, below the PSD major-source permitting threshold. Therefore, the installation of the boilers will not be subject to the requirements of the PSD program and it will be possible for EPA to revoke the PSD permit issued on June 1, 1981.

Permit #1427-02 also included the medical waste incinerator and the classified document incinerator to the list of permitted equipment on the base. Even though a permit was not required by the state at the time of construction, the Department determined a permit was necessary to meet the requirements of ARM 17.8.705 and for Malmstrom to operate the incinerators. The conditions applicable to the incinerators were included as part of that permit action.

Finally, Permit #1427-02 included the tanks installed in 1987, which Malmstrom was not required to permit at the time of construction. The Department determined that a permit was necessary to meet the requirements of ARM 17.8.705 and to operate the tanks. The conditions applicable to the tanks were included as part of the permit.

On July 17, 1996, the Department received information regarding minor facility changes. The facility changes were assigned Permit **#1427-03**. Subsequent to receipt of this information, the Department determined that the facility changes did not require any permit action, therefore, Permit #1427-03 was not issued.

Permit Modification #**1427-04** removed the Medical Waste Incinerator from Malmstrom's permit. Disposal of the medical red bag waste is accomplished through a private contractor, and the gas supply for the incinerator has been disconnected.

In addition, Permit Modification #1427-04 removed two large fuel storage tanks (S-1 and S-2), subject to 40 CFR Part 60, Subpart Kb, from Malmstrom's permit and emission inventory. Malmstrom decommissioned the two large (1,050,000 gallons each) aboveground fuel storage tanks (S-1 and S-2) with the relocation of the 43d Air Refueling Group. The remaining tanks (H-1 and H-2) are each 210,000-gallon and primarily support the helicopters used by the 341st missile wing.

Further, the permit modification also established a new testing campaign to begin by January 31, 2001, and to perform compliance testing on a once-every-4-year basis thereafter. Malmstrom requested a one-year extension to conduct emission testing on the base's heating plant boilers. The reasoning behind the request was that the boilers (Coal-fired) located at Malmstrom have been selected for outsourcing and will be operated by a private (non-government) contractor. The contractor that was awarded the bid for services will begin operation of the facilities on January 15, 2000.

Permit Alteration #1427-04 resulted in an overall decrease in the allowable emissions from the facility. Permit #1427-04 replaced Permit #1427-02.

On December 22, 1999, the Department received a request from Malmstrom for modification of Permit #1427-04. Condition II.A.18 in Permit #1427-04, regarding jet fuel storage tanks H-1 and H-2, required that Malmstrom comply with 40 CFR Part 60, Standards of Performance for New Stationary Sources, Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels. However, based on information in the permit modification request, the Department determined that changes in Air Force policy and practice made 40 CFR Part 60, Subpart Kb, no longer applicable to jet fuel storage tanks H-1 and H-2.

Section I.B.5 of the permit analysis to Permit #1427-04 listed two 210,000-gallon storage tanks used for the storage of JP-4 and JP-8 jet fuel. Because of the physical characteristics of JP-4 jet fuel, and because Malmstrom had the option of storing JP-4 jet fuel in storage tanks H-1 and H-2, the tanks were subject to the requirements of 40 CFR Part 60, Subpart Kb. However, changes in Air Force policy dictated that the Air Force no longer utilize JP-4 jet fuel. Instead, Malmstrom reverted to the storage and use of JP-8 jet fuel only in the two affected storage tanks. JP-8 jet fuel has a vapor pressure <3.5 kPa; therefore, storage of JP-8 or a similar jet fuel with a vapor pressure <3.5 kPa rendered the jet fuel storage tanks H-1 and H-2 as non-affected sources under 40 CFR Part 60, Subpart Kb, 60.110b. Therefore, the fuel storage tanks H-1 and H-2 are no longer subject to the requirements of 40 CFR Part 60, Subpart Kb.

The permit action removed permit condition II.A.18 in Permit #1427-04 and relieved Malmstrom from the responsibility of compliance with 40 CFR, Subpart Kb for jet fuel storage tanks H-1 and H-2. Further, the permit action added, in place of permit condition II.A.18 in Permit #1427-04, a condition requiring the storage of JP-8 jet fuel or a similar jet fuel with a vapor pressure <3.5 kPa only. Finally, the permit action updated the

equipment list in Section I.B of the permit analysis to Permit #1427-04 to properly identify the 210,000-gallon fuel storage tanks H-1 and H-2 and change the name of the boilers from High Temperature Hot Water Generators #1, #2, and #3 to Heating Plant Boilers #1, #2, and #3. Permit **#1427-05** replaced Permit #1427-04.

D. Current Permit Action

On November 26, 2002, the Department received a request for permit modification from Malmstrom. The need for permit modification stems from information provided to the Department by Malmstrom on August 28, 2002. On this date, the Department received a copy of a letter, dated November 5, 2001, from Malmstrom requesting a permit determination. The Department does not have any record of the letter being received on or around November 5, 2001. The permit determination request was for the removal of the existing Building 1075 natural gas fired boiler rated at 11.954 MMBtu/hr heat input capacity and replacement of the existing unit with two smaller 2.1 MMBtu/hr heat input capacity units. Because potential emissions from the replacement boilers are less than the de minimis threshold of 15 tons per year (tpy) for any regulated pollutant, the Department determined that the changes were accomplished in accordance with ARM 17.8.705(1)(r). Emission calculations demonstrating compliance with ARM 17.8.705(1)(r) for the replacement boilers are contained in Section IV of the permit analysis.

The letter received by the Department on November 26, 2002, also indicated that Malmstrom intends to install and operate a 200-kilowatt (kW) emergency diesel generator in the Building 780, Missile Services Facility. Because potential emissions of all regulated pollutants from the proposed Building 780 emergency diesel generator, operating under emergency/back-up equipment status, are less than 15 tons per year, the Department determined that installation and operation of the Building 780 emergency diesel generator can be accomplished under the provisions of ARM 17.8.705(1)(r). Section II.A.21 contains emergency/back-up equipment requirements. Emission calculations demonstrating compliance with ARM 17.8.705(1)(r) for the Building 780 emergency diesel generator are contained in Section IV of the permit analysis.

On January 29, 2003, the Department received notice of a contested case hearing before the Montana Board of Environmental Review (Board) regarding specific conditions that were included in the Department's decision on Montana Air Quality Permit #1427-06, issued January 13, 2003. Based on the Settlement Stipulation and Order issued by the Board on March 28, 2003, the following revisions have been made to Permit #1427-06 prior to issuance as a final permit:

<u>Permit Section II.A.21</u>

Contested Language

Operation of any emergency/back-up power generating equipment shall be limited to 500 hours during any rolling 12-month time period (ARM 17.8.710).

Permit Change

The Building 780 emergency/back-up diesel generator shall only be operated during periods when electric power from the local utility is interrupted or as necessary for routine maintenance of the generator (ARM 17.8.710).

<u>Permit Section II.C.4</u>

Contested Language

Malmstrom shall document, by month, the hours of operation for each emergency/back-up diesel generator at the facility. By the 25th day of each month, Malmstrom shall total the hours of operation for each emergency/back-up diesel generator during the previous 12 months to verify compliance with Section II.A.21. A written report of the compliance verification shall be submitted along with the annual emission inventory (ARM 17.8.710).

Permit Change

Malmstrom shall document, by month, the hours of operation of the Building 780 emergency/back-up diesel generator at the facility. By the 25th day of each month, Malmstrom shall total the hours of operation of the Building 780 emergency/back-up diesel generator during the previous 12 months to verify compliance with emergency/back-up status requirements. A written report of compliance verification shall be submitted along with the annual emission inventory (ARM 17.8.710).

Permit Analysis, Section IV, Emission Inventory, Building 1075 – Natural Gas Fired Boiler #1 and Boiler #2, CO Emissions Calculations, Page 11

Contested Calculation

"…0.77 ton/yr/Boiler * 2 Boilers = 0.1.55 ton/yr"

Permit Change

"…0.77 ton/yr/Boiler * 2 Boilers = 1.55 ton/yr"

Permit Analysis, Section IV, Emission Inventory, Building 1075 – Natural Gas Fired Boiler #1 and Boiler #2, SO_2 Emissions Calculations, Page 11

Contested Calculation

"…0.001 lb/hr/Boiler * 8760 hr/yr * 0.0005 ton/lb = 0.006 ton/yr/Boiler
0.07 ton/yr/Boiler * 2 Boilers = 0.012 ton/yr"

Permit Change

"…0.001 lb/hr/Boiler * 8760 hr/yr * 0.0005 ton/lb = 0.006 ton/yr/Boiler
0.006 ton/yr/Boiler * 2 Boilers = 0.012 ton/yr"

Permit **#1427-06** replaces Permit #1427-05.

E. Additional Information

Additional information, such as applicable rules and regulations, BACT determinations, air quality impacts, and environmental assessments, are included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana and are available upon request from the Department. Upon request, the Department will provide references for locations of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1, General Provisions, including, but not limited to:

1. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emissions of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment, including instruments and sensing devices, and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department.

2. ARM 17.8.106 Source Testing Protocol. Malmstrom shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual.

3. ARM 17.8.110 Malfunctions. The Department must be notified promptly by phone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation, or to continue for a period greater than four hours.

4. ARM 17.8.111 Circumvention. No person shall cause or permit the installation or use of any device or any means which, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant which would otherwise violate an air pollution control regulation. No equipment that may produce emissions shall be operated or maintained in such a manner that a public nuisance is created.

B. ARM 17.8, Subchapter 2, Ambient Air Quality, including, but not limited to:

1. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
2. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
3. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
4. ARM 17.8.220 Ambient Air Quality Standards for Settled Particulate Matter
5. ARM 17.8.222 Ambient Air Quality Standards for Lead
6. ARM 17.8.223 Ambient Air Quality Standards for PM-10

Malmstrom must comply with applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3, Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter. (2) Under this rule, Malmstrom shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this rule.

4. ARM 17.8.310 Particulate Matter, Industrial Process. This rule requires that no person shall cause, allow or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this rule.

5. ARM 17.8.316 Incinerators. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any incinerator, particulate matter in excess of 0.10 grains per standard cubic foot of dry flue gas, adjusted to 12% carbon dioxide and calculated as if no auxiliary fuel had been used. Further, no person shall cause or authorize to be discharged into the outdoor atmosphere from any incinerator emissions that exhibit an opacity of 10% or greater averaged over 6 consecutive minutes.

6. ARM 17.8.324 Hydrocarbon Emissions--Petroleum Products. (3) No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank is equipped with a vapor loss control device as described in (1) of this rule.

7. ARM 17.8.340 Standard of Performance for New Stationary Sources. This rule incorporates by reference 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). The following sources are considered NSPS affected facilities under the following subparts.

   Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units. This Subpart does not apply to the heating plant boilers. The units do not produce steam and, therefore, are not affected facilities.

   Subpart Kb, Volatile Organic Liquid Storage Vessels. This section applies to tanks for which construction, reconstruction or modification commenced after July 23, 1984. The Department has determined that Subpart Kb does not apply to the above ground fuel storage tanks listed in Section I.B.5 of the analysis section of this permit.

   Subpart E, Standards of Performance for Incinerators. This subpart does not apply to the classified document incinerator since the incinerator has a design capacity of 5.22 tons per day, which is less than the applicability size of 50 tons per day.

   Subpart Ce, Emission Guidelines and Compliance Times for Hospital/Medical/Infectious Waste Incinerators. This subpart does not apply because the base's medical waste incinerator has been rendered inoperable, and is no longer in service.

D. ARM 17.8, Subchapter 5, Air Quality Permit Application, Operation and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. Malmstrom shall submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. The current permit action was accomplished in accordance with ARM 17.8.705(1)(r) and does not require a permit application or application fee.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit, excluding an open burning permit, issued by the Department. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

   The annual assessment and collection of the air quality operation fee, as described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions which pro-rate the required fee amount.

E. ARM 17.8, Subchapter 7, Permit, Construction and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.704 General Procedures for Air Quality Preconstruction Permitting. This air quality preconstruction permit contains requirements and conditions applicable to both construction and subsequent use of the permitted equipment.

2. ARM 17.8.705 When Permit Required, Exclusions. This rule requires a facility to obtain an air quality permit or permit alteration if they construct, alter or use any air contaminant sources that have the potential to emit greater than 25 tons per year of any pollutant. Malmstrom has the potential to emit more than 25 tons per year of PM, PM_{10}, NO_x, CO, and SO_2; therefore, an air quality permit is required.

3. ARM 17.8.706 New of Altered Sources and Stacks - Permit Application Requirements. This rule requires that a permit application be submitted prior to installation, alteration or use of a source. Malmstrom is not required to submit a permit application for the current permit modification request.

4. ARM 17.8.707 Waivers. ARM 17.8.706 requires the permit application be submitted 180 days before construction begins. This rule allows the Department to waive this time limit. The Department hereby waives this requirement for the current permit action.

5. ARM 17.8.710 Conditions for Issuance of Permit. This rule requires that Malmstrom demonstrate compliance with applicable rules and standards before a permit can be issued. Also, a permit may be issued with such conditions as are necessary to ensure compliance with all applicable rules and standards. Malmstrom demonstrated compliance with all applicable rules and standards as required for permit issuance.

6. ARM 17.8.715 Emission Control Requirements. This rule requires a source to

install the maximum air pollution control capability, which is technically practicable and economically feasible except that BACT shall be utilized. The BACT analysis is included in Section III of this permit analysis.

7. ARM 17.8.716 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.

8. ARM 17.8.717 Compliance with Other Statutes and Rules. This rule states that nothing in the permit shall be construed as relieving Malmstrom of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.701, *et seq*.

9. ARM 17.8.720 Public Review of Permit Applications. This rule requires that Malmstrom notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application of its application for permit. Malmstrom is not required to issue a public notice for the current administrative permit modification.

10. ARM 17.8.731 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or altered source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

11. ARM 17.8.733, Modification of Permit. An air quality permit may be modified for changes in any applicable rules and standards adopted by the board or changed conditions of operation at a source or stack that do not result in an increase in emissions because of those changed conditions of operation. A source may not increase its emissions beyond those found in its permit unless the source applies for and receives another permit.

F. ARM 17.8, Subchapter 8, Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This permit contains operational limits on the boilers, which limit emissions to below the PSD major source threshold. EPA has revoked the PSD permit issued on June 1, 1981.

2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the Federal Clean Air Act (FCAA) that it would emit, except as this subchapter would otherwise allow.

3. ARM 17.8.827 Source Obligations. If the operational limitations on the heating plant boilers are relaxed in the future, such that potential emissions from the boilers exceed 250 tons of any pollutant, the requirements of ARM 17.8.801 through ARM 17.8.828 shall apply as though initial construction has not yet commenced.
This facility is not a major stationary source since this facility is not a listed source and the facility's permitted potential to emit is below 250 tons per year of

any pollutant (excluding fugitive emissions).

G. ARM 17.8, Subchapter 12 – Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any source having:

   a. Potential to Emit (PTE) > 100 tons/year of any pollutant;

   b. PTE > 10 tons/year of any one Hazardous Air Pollutant (HAP), PTE > 25 tons/year of a combination of all HAPs, or a lesser quantity as the Department may establish by rule; or

   c. PTE > 70 tons/year of PM_{10} in a serious PM_{10} nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing Air Quality Permit #1427-06 for Malmstrom, the following conclusions were made.

   a. The facility's PTE is greater than 100 tons/year for NO_x, CO, and SO_2.

   b. The facility's PTE is less than 10 tons/year for any one HAP and less than 25 tons/year for all HAPs.

   c. This source is not located in a serious PM_{10} nonattainment area.

   d. This facility is subject to NSPS requirements as listed in Section II.C.6 of the permit analysis.

   e. This facility is not subject to any current NESHAP standards.

   f. This source is not a Title IV affected source, nor a solid waste combustion unit.

   g. This source is not an EPA designated Title V source.

Based on these facts, the Department determined that Malmstrom is subject to the Title V operating permit program. Malmstrom currently operates under Title V Operating Permit #OP1427-02, which was issued final and effective on September 21, 2002. Further, in accordance with ARM 17.8.1226, the current permit action constitutes a minor modification of Title V Operating Permit #OP1427-02. Malmstrom submitted a Title V application for a minor modification to Title V Operating Permit #OP1427-02 concurrently with the current preconstruction permit modification request.

III. BACT Determination

A BACT determination is required for each new or altered source. Malmstrom shall install on the new or altered source the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The new Building 1075 natural gas-fired boilers and the Building 780 emergency diesel generator added to the permit under the current permit action do not require a BACT determination because they were included in the permit in accordance with ARM 17.8.705(1)(r) and the current permit action is considered

administrative.

IV. Emission Inventory

An expanded emission inventory, which encompasses all emission points considered in previous permit actions, is contained in the emission inventory section for each respective permit. The primary emission units at Malmstrom are the Heating Plant Boilers, which are inventoried below. The following emission inventory also includes emission estimates for the new Building 1075 natural gas fired boilers permitted under the current permit action.

	tons per year					
Source	**PM**	**PM_{10}**	**NO_x**	**SO_2**	**CO**	**VOC**
Heating Plant Boilers	52.6	52.6	249.8	159.8	138.8	1.6

Calculations: Based on Worst Case Fuel Combustion

Fuel consumption = 999,000 MMBTU/yr {Permit Limit}

If All Natural Gas:
Assume conservative heat content of 900 MMBtu/MMscf
999000 MMBTU/yr * 0.0011 MMscf/MMBTU = 1110 MMscf/yr

If All Coal:
Assume conservative heat content of 18 MMBtu/ton
999000 MMBtu/yr * 0.0556 ton/MMBtu = 55,500 tons coal/year

Total Particulate (Coal and Natural Gas)

Emission Factor		4	lb/hour {Permit Limit}
PM	=	4.0	lb/hour * 8760 hours/year * 0.0005 ton/lb
	=	17.52	tons/year per Boiler
	=	52.56	tons/year

PM_{10} (Coal and Natural Gas)
Assume all TSP is PM_{10}

Emission Factor		4	lb/hour {Permit Limit}
PM_{10}	=	4.0	lb/hour * 8760 hours/year * 0.0005 ton/lb
	=	17.52	tons/year per Boiler
	=	52.56	tons/year

NO_x Emissions (Coal and Natural Gas):

Emission Factor:		0.5	lb/MMBtu {Permit Limit}
Fuel Consumption: 999000 MMBtu/yr			{Permit Limit}
NOx	=	0.5	lb/MMBtu * 999000 MMBtu/yr * 0.0005 ton/lb
	=	249.75	ton/yr

SO_2 Emissions (Coal):

Emission Factor:		0.32	lb/MMBtu {Proposed Permit Limit}
Fuel Consumption: 999000 MMBtu/yr			{Proposed Permit Limit}
SO_2	=	0.32	lb/MMBtu * 999000 MMBtu/yr * 0.0005 ton/lb
	=	159.84	ton/yr

SO_2 Emissions (Natural Gas):

Emission Factor:		0.60	lb/MMscf {FIRE V 5.0 SCC 10200602}
SO2	=	1110	MMscf/yr * 0.60 lb/MMscf * 0.0005 ton/lb
	=	0.33	ton/yr

CO Emissions (Coal)

Emission Factor:		5.00	lb/ton coal {FIRE V 5.0 SCC 10200204}
CO	=	55500	tons coal/year * 5.00 lb/ton coal * 0.0005 ton/lb
	=	138.75	ton/yr

CO Emissions (Natural Gas)

Emission Factor:		35.00	lb/MMscf {FIRE V 5.0 SCC 10200602}
CO	=	1110	MMscf/yr * 35.00 lb/MMscf * 0.0005 ton/lb

	=	19.43	ton/yr

VOC Emissions (Coal)

Emission Factor:		0.05	lb/ton {FIRE V 5.0 SCC 10200204}
VOC	=	55500	tons coal/year * 0.05 lb/ton * 0.0005 ton/lb =
	=	1.39	ton/yr

VOC Emissions (Natural Gas)

Emission Factor:		2.80	lb/MMscf {FIRE V 5.0 SCC 10200602}
VOC	=	1110	MMscf/yr * 2.80 lb/MMscf * 0.0005 ton/lb =
	=	1.55	ton/yr

Emission Inventory: Permit #1427-06

tons per year					
Source	**PM_{10}**	**NO_x**	**CO**	**VOC**	**SO_2**
Building 1075 - Natural Gas Fired Boiler #1 (2.1 MMBtu/hr)	0.07	0.92	0.77	0.05	0.006
Building 1075 - Natural Gas Fired Boiler #2 (2.1 MMBtu/hr)	0.07	0.92	0.77	0.05	0.006
Total	**0.14**	**1.84**	**1.55**	**0.10**	**0.012**

- assume all PM emissions are PM_{10}

tons per year					
Source	**PM_{10}**	**NO_x**	**CO**	**VOC**	**SO_2**
Building 780 Emergency Diesel Generator (200 kw)	0.15	2.08	0.45	0.17	0.14

- assume all PM emissions are PM_{10}

Building 1075 – Natural Gas Fired Boiler #1 and Boiler #2

Heat Input Capacity: 2.1 MMBtu/hr/Boiler
Hours of Operation: 8760 hr/yr
Fuel Heating Value: 0.001 MMscf/MMBtu

PM_{10} Emissions

Emission Factor: 7.6 lb/MMscf (AP-42 Table 1.4-2, 07/98)
Calculations: 7.6 lb/MMscf * 0.001 MMscf/MMBtu * 2.1 MMBtu/hr = 0.02 lb/hr/Boiler
0.02 lb/hr/Boiler * 8760 hr/yr * 0.0005 ton/lb = 0.07 ton/yr/Boiler
0.07 ton/yr/Boiler * 2 Boilers = 0.14 ton/yr

NO_x Emissions

Emission Factor: 100 lb/MMscf (AP-42 Table 1.4-2, 07/98)
Calculations: 100 lb/MMscf * 0.001 MMscf/MMBtu * 2.1 MMBtu/hr = 0.21 lb/hr/Boiler
0.21 lb/hr/Boiler * 8760 hr/yr * 0.0005 ton/lb = 0.92 ton/yr/Boiler
0.92 ton/yr/Boiler * 2 Boilers = 1.84 ton/yr

CO Emissions

Emission Factor: 84 lb/MMscf (AP-42 Table 1.4-2, 07/98)
Calculations: 84 lb/MMscf * 0.001 MMscf/MMBtu * 2.1 MMBtu/hr = 0.18 lb/hr/Boiler
0.18 lb/hr/Boiler * 8760 hr/yr * 0.0005 ton/lb = 0.77 ton/yr/Boiler
0.77 ton/yr/Boiler * 2 Boilers = 1.55 ton/yr

VOC Emissions

Emission Factor: 5.5 lb/MMscf (AP-42 Table 1.4-2, 07/98)
Calculations: 5.5 lb/MMscf * 0.001 MMscf/MMBtu * 2.1 MMBtu/hr = 0.01 lb/hr/Boiler
0.01 lb/hr/Boiler * 8760 hr/yr * 0.0005 ton/lb = 0.05 ton/yr/Boiler
0.05 ton/yr/Boiler * 2 Boilers = 0.10 ton/yr

SO_2 Emissions

Emission Factor: 0.6 lb/MMscf (AP-42 Table 1.4-2, 07/98)

Calculations: 0.6 lb/MMscf * 0.001 MMscf/MMBtu * 2.1 MMBtu/hr = 0.001 lb/hr/Boiler
0.001 lb/hr/Boiler * 8760 hr/yr * 0.0005 ton/lb = 0.006 ton/yr/Boiler
0.006 ton/yr/Boiler * 2 Boilers = 0.012 ton/yr

Building 780 Emergency Diesel Generator (200 kw)

Generator Output Capacity: 200 kw or 268.2 Hp
Hours of Operation: 500 hr/yr

PM Emissions

Emissions Factor: 0.0022 lb/Hp-hr (AP-42 Table 3.3-1)
Calculations: 268.2 Hp * 0.0022 lb/Hp-hr * 500 hr/yr * 0.0005 ton/lb = 0.15 ton/yr

PM_{10} Emissions

Emissions Factor: 0.0022 lb/Hp-hr (AP-42 Table 3.3-1)
Calculations: 268.2 Hp * 0.0022 lb/Hp-hr * 500 hr/yr * 0.0005 ton/lb = 0.15 ton/yr

NOx Emissions

Emissions Factor: 0.0310 lb/Hp-hr (AP-42 Table 3.3-1)
Calculations: 268.2 Hp * 0.0310 lb/Hp-hr * 500 hr/yr * 0.0005 ton/lb = 2.08 ton/yr

CO Emissions

Emissions Factor: 0.00668 lb/Hp-hr (AP-42 Table 3.3-1)
Calculations: 268.2 Hp * 0.00668 lb/Hp-hr * 500 hr/yr * 0.0005 ton/lb = 0.45 ton/yr

VOC Emissions

Emissions Factor: 0.00247 lb/Hp-hr (AP-42 Table 3.3-1)
Calculations: 268.2 Hp * 0.00247 lb/Hp-hr * 500 hr/yr * 0.0005 ton/lb = 0.17 ton/yr

SOx Emissions

Emissions Factor: 0.00205 lb/Hp-hr (AP-42 Table 3.3-1)
Calculations: 268.2 Hp * 0.00205 lb/Hp-hr * 500 hr/yr * 0.0005 ton/lb = 0.14 ton/yr

V. Hazardous Air Pollutants (HAPS)

The following HAPS have been identified as being emitted from the heating plant boilers: Arsenic, Cadmium, Formaldehyde, and Lead. There are currently no emission standards applicable to these pollutants from this type of facility.

VI. Air Quality Impacts

The current permit action results in a minor decrease in potential emissions from Building 1075 emitting units; therefore, the Department determined that no additional air quality impacts as a result of the current permit action.

VII. Existing Air Quality

The facility is in an area identified as attainment for all pollutants. However, the facility is located near an area that is nonattainment for CO, but the Malmstrom facility has not been identified in any studies as impacting this nonattainment area. Because the previous Building 1075 natural gas fired boiler was replaced with the 2 significantly smaller natural gas fired boilers and because emissions from the new boilers are relatively minor, the Department believes that the addition of the new boilers will not result in any additional impacts to the existing CO nonattainment area and will not contribute a violation of any other ambient air quality standard.

VIII. Taking or Damaging Implication Analysis

As required by 2-10-101 through 105, MCA, the Department has conducted a private property taking and damaging assessment and has determined there are no taking or damaging implications.

IX. Environmental Assessment

The current permit action is considered an administrative permit action and does not require an environmental assessment because the new boilers were added to the permit in accordance with ARM 17.8.705(1)(r).

Permit Analysis Prepared By: M. Eric Merchant, MPH
Date: January 2, 2003